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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/620,076	07/15/2003	Michael I. Thompson	QN1023.US	7133

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EXAMINER	
HOANG, HIEU T	

ART UNIT	PAPER NUMBER
2152	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/620,076	THOMPSON, MICHAEL I.	
	Examiner	Art Unit	
	Hieu T. Hoang	2152	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 July 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *05/27/2005, 12/29/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to the communication filed on 07/15/2003.

2. Claims 1-29 are pending and presented for examination.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Consider the limitation "providing plural registers and timer functions to other system sub-modules," the claim does not define what a sub-module is, or what a "main" module is in its relationship with the sub-module. The term "sub-module", therefore, is totally vague and indefinite. For examining purpose, a "sub-module" is read as any hardware or software module connected the pool of buffers.

5. Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. What is a "free list of data structure"? The term "free list" is vague and indefinite. For examining purpose, a "free list" is read as any list of data structures.

6. Claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear whether "a host" on line 5 is same or different from "a host" on line 3. For examining purpose, "a host" on line 5 will be treated as "the host."

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Boucher et al. (US 6,434,620, hereafter Boucher)

9. For claim 1, Boucher discloses a system for processing network data packets using a hardware engine, comprising:

a TCP Table manager for managing a TCP connection's state information (fig. 26,

SRAM processing TCP information, col. 61 lines 14-30, CCBs (communication control block) contains TCP control information are stored as indexes in hash order in SRAM) by providing a pool of buffers used for data structures (a col. 61, lines 14-30, table 2, buffers for CCBs, commands, and status) and providing plural registers and timer functions to other system sub-modules (fig. 26, SRAM control sequencer containing registers and timers, fig. 27, timing diagram of SRAM control sequencer).

10. For claim 2, Boucher further discloses the TCP Table manager maintains a free list of data structures that are used for storage of TCP connection state (col. 61 lines 14-30, CCBs (communication control block) contains TCP control information) and storage of TCP transfer requests (col. 63 lines 24-29).

11. For claim 3, Boucher further discloses the TCP Table Manager provides a cache of network control blocks ("NCBs") (buffer of CCBs).

12. For claim 4, Boucher further discloses the TCP Table Manager has a command processor that arbitrates between plural command sources and translates a received command to an output action(s) to other TCP Table Manager components (fig. 26, arbiter receives requests and translates them to outputs to register component, fig. 28).

13. For claim 5, Boucher further discloses the TCP table manager's command processor coordinates inbound and/or outbound channel access to network data

structures (fig. 26, arbiter coordinates inbound access to data structures stored in registers).

14. For claim 6, Boucher further discloses the TCP Table Manager provides a read / write register interface to allow simultaneous access to fields within the NCBs (fig. 54, SRAM read and write registers, col. 65 lines 24-27, locking a CCB to stop other processing such as transmit or reading while receiving or writing is taking place).

15. For claim 7, Boucher further discloses the TCP table manager's register interface provides a locking mechanism to allow sole access to a particular field within an NCB (col. 65 lines 24-27, locking a CCB to stop other processing such as transmit).

16. For claim 8, Boucher further discloses the TCP table manager includes a timer list manager that maintains timer functions for all TCP connections (col. 60 lines 9-10, col. 67 lines 25-26).

17. For claim 9, Boucher further discloses the timer list manager maintains a persist timer, an idle timer, a delayed ACK timer and/or a retransmit timer for each TCP connection (col. 60 lines 9-10, col. 67 lines 25-26, col. 2 line 47).

18. For claim 10, Boucher further discloses the timer list manager scans a timer list and checks for timed events that have expired (col. 60 lines 9-10, col. 67 lines 25-26, this is an inherent feature of timers).

19. For claim 11, Boucher further discloses the TCP table manager maintains an outbound request list to signal if a network control block is ready for transmit processing due to a timer event or a receive event (col. 69, lines 4-6, when a retransmission timer expires, the context CCB will be flushed to a host).

20. For claim 12, Boucher discloses a system for processing network data packets using a hardware engine, comprising:

- an outbound TCP processor that takes requests from a host to transmit TCP data, transmits the TCP data following TCP rules (fig. 21, processor 484 for transmitting TCP data, col. 12 lines 11-15, transmitting TCP data from a host to a remote host either using a slow path or a fast path)
- signals to a host when the transmission is complete and has arrived on the remote node (col. 11 lines 59-61); and
- transmits TCP acknowledgements in response to TCP data received (col. 11 lines 59-61, when a node receives TCP data, it responses by sending out an acknowledgement ACK).

21. For claim 13, Boucher further discloses a request manager that downloads an input/output control block ("IOCB") and determines what action is required with respect to the downloaded IOCB (col. 7 lines 17-45, a CCB or communication control block can be downloaded from the host memory to a CCB cache in a INIC/CPD (intelligent NIC or communication processing device), and stored in the CPD for processing, col. 69 l. 50, CCB contains input output command).

22. For claim 14, Boucher further discloses a window update module that processes plural events from a TCP Table Manager and an Inbound TCP Processor (fig. 21, processor 482 for inbound TCP processing of received packets, col. 5 lines 56-61, flow control sliding windows for sending and receiving packets).

23. For claim 15, Boucher further discloses a main control module that determines if a network control block is in a valid state to send data and how much data needs to be sent (col. 65 lines 28-46, examine a CCB for validity for appropriate processes).

24. For claim 16, Boucher further discloses a completion module that sends completion messages when the outbound TCP processor completes processing a command and/or operation (col. 11 lines 59-61).

25. For claim 17, Boucher further discloses an IP Interface module that signals an IP processor module to build an IP and MAC protocol header and then builds a TCP

header based on information obtained from a network control block ("NCB") (col. 69 l. 63-col. 70 l. 5).

26. For claim 18, Boucher further discloses an outbound DMA engine interface that scans a scatter/gather list of buffers to be transmitted, fetches the proper length of data to be sent and passes this data to the IP processor module to be concatenated with built TCP/IP headers (col. 68 line 43- col. 69 line 9, DMA scatter/gather lists, calculate size of a segment and create a TCP/IP header).

27. Claims 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Vogel (US 6,483,840)

28. For claim 19, Vogel discloses a system for processing network data packets using a hardware engine, comprising: an inbound IP fragment processor that receives IP datagram fragments and manages the reassembly of any number of in-process datagrams, wherein re-assembled datagrams are passed to a TCP processor (fig. 1, col. 5 l. 60-col. 6 l. 14, IP processor reassembles IP fragmentations then passes complete datagrams to a TCP processor), or to a host for non-TCP packets.

Claim Rejections - 35 USC § 103

29. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

30. Claims 20, 25-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vogel as applied to claim 19 above, and further in view of Sarkinen et al. (US 2003/0058880, hereafter Sarkinen)

31. For claims 20, Vogel discloses the invention as in claim 19. Vogel further discloses an input processor for parsing data packet header information, assembling datagrams (fig. 1, col. 5 l. 60-col. 6 l. 14, IP processor reassembles IP fragmentations then passes complete datagrams to a TCP processor), and interfacing with an output processor (fig. 1 TCP processor).

Vogel does not explicitly disclose a return processor.

However, However, Sarkinen discloses the same ([0121], return buffer to the free list if there is an packet error)

Therefore, it would have been obvious for one skilled in the art at the time of the invention to combine the teachings of Vogel and Sarkinen to free buffers when there is an error in packet reception in order to make the buffers available for reuse and therefore save hardware resources.

32. For claim 25, Vogel-Sarkinen discloses the invention as in claim 20. Vogel-Sarkinen further discloses if a reassembled datagram is not destined for a TCP address, then it is sent to a host system for disposition (Vogel, fig. 1, UDP data is sent to a host).

33. For claim 26, Vogel-Sarkinen discloses the invention as in claim 20. Vogel-Sarkinen further discloses the input processor passes a complete datagram to an output processor (Vogel, fig. 1, complete datagram is passed from a IP processor to a TCP processor).

34. For claims 27 and 28, the claims are rejected for the same rationale as in claim 26.

35. For claim 29, Vogel-Sarkinen further discloses a return processor that takes the buffers used to receive IP fragments and returning the buffers to a free buffer pool if an error occurred in the reassembly of the datagram or if the fragment was not necessary for the reassembly (Sarkinen, [0121], return buffer to the free list if there is an packet error).

36. Claims 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vogel-Sarkinen, as applied to claim 20 above, in view of Trippe (US 2003/0108066)

37. For claim 21, Vogel-Sarkinen discloses the invention as in claim 20. Vogel-Sarkinen does not disclose if a datagram is not complete, the input processor verifies if an entry exists in a reassembly list and adds an entry if no entry exists.

However, Trippe discloses the same (Trippe, fig. 7, steps 128, 134, if a packet is not an end of packet set, add to a new list).

Therefore, it would have been obvious for one skilled in the art at the time of the invention to combine the teachings of Vogel-Sarkinen and Trippe to manipulate a reassembly list the way Trippe discloses.

38. For claim 22, Vogel-Sarkinen-Trippe further discloses the input processor sets a first fragment flag when a datagram is added to the reassembly list (Trippe, fig. 7, steps 136, 138, start a new packet set with a start sequence number of set).

39. For claim 23, Vogel-Sarkinen-Trippe further discloses if an entry already exists and the datagram is found in the reassembly list, then the fragment is added to the reassembly list for the datagram (Trippe, fig. 8, add a packet to arrangement of existing packet set).

40. For claim 24, Vogel-Sarkinen-Trippe further discloses when a fragment is added to the reassembly list, the input processor verifies if an incoming fragment is sequential to either a previous or next fragment and trims the fragment if sequential (Trippe,

[0006], [0033], packet reassembling is a process of removing headers and concatenating data fields).

Conclusion

41. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- Hartke et al. US 6,983,382. Accelerating SSL process.
- Basso et al. US 2002/0156908. Data structures for reassembling IP fragmentations.

42. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hieu T. Hoang whose telephone number is 571-270-1253. The examiner can normally be reached on Monday-Thursday, 8 a.m.-5 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bunjob Jaroenchonwanit can be reached on 571-272-3913. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HH

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5/29/07